Environ Resource Econ (2013) 55:469–474
DOI 10.1007/s10640-013-9681-8

People and the Planet

John Sulston · Marie Rumsby · Nick Green

Accepted: 25 April 2013 / Published online: 18 May 2013

The starting point for this special issue is the Royal Society's report 'People and the planet'.[1] In this introductory paper we recapitulate some of the points covered by the report, which is broadly concerned with the achievement of sustainable human development on a finite planet, and its main conclusions. The report concludes that sustainable development will come about not simply through advances in science and technology, important as they are, but also through changes in the prevailing socioeconomic system. This is the domain of environmental and resource economics.

The 21st century is a critical period for people and the planet. The global population reached 7 billion during 2011 and is likely to reach between 8 and 11 billion by 2050 (Fig. 1). In one sense this is a success story for earth's dominant species, but at the same time human impact on the Earth is now raising grave concerns. The earth's capacity to meet human needs (let alone those of its other inhabitants) is finite. Yet in the richest parts of the world material consumption is far above the level that can be sustained for everyone in a population of seven billion or more. This is in contrast to the world's 1.3 billion poorest people who need to consume more in order to be raised out of extreme poverty. Despite a decline in fertility almost everywhere, global population is still growing at a rate of 1 billion in 12 years because of the demographic momentum inherent in a large cohort of young people. The highest fertility rates are now seen primarily in the least developed countries (Fig. 2). The global rate of population growth is already declining, but the poorest countries are neither experiencing nor benefiting from this decline.

A key message to come out of the People and the planet report is that population and consumption must not be treated as separate issues. Human impact on the earth comes from the combination of increasing global population and increasing per capita material consumption

[1] Report available at: http://royalsociety.org/policy/projects/people-planet/report/.

J. Sulston (✉)
Institute for Science, Ethics and Innovation,
University of Manchester, Oxford Road, Manchester M13 9PL, UK
e-mail: jsulston@yahoo.co.uk

M. Rumsby · N. Green
Science Policy Centre, The Royal Society, 6-9 Carlton House Terrace, London SW1Y 5AG, UK

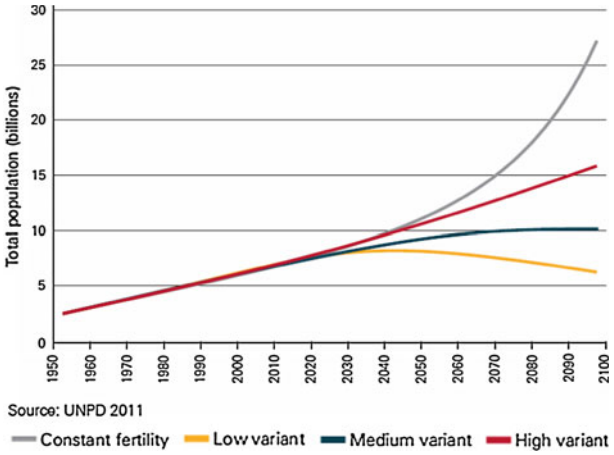

Fig. 1 UNPD projections for global population growth on high, medium and low assumptions. The *grey curve* shows what will happen if human fertility remains at current levels.

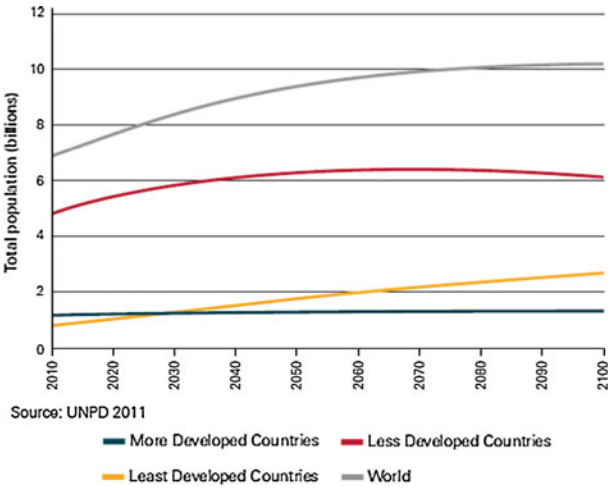

Fig. 2 Regional components of the UNPD medium projection

(illustrated, with energy as an example, in Figs. 3, 4 and 5). Material consumption that draws on natural resources must be distinguished from economic consumption that may or may not involve resource consumption.

As both population and consumption continue to increase, signs of unwanted impacts, interactions and feedback are growing. Climate change is reducing crop yields in some areas, and the elevated rate of species extinction is causing irreversible loss. The progressive increase in the melting of arctic ice is now a directly visible symptom that human impact is substantial, and may be an indication that a tipping point is being reached as more solar energy is absorbed at high latitudes. The earth's capacity to meet human needs is finite, but how the limits are approached depends on lifestyle choices and associated consumption; these depend on what is used, and how, and what is regarded as essential for human wellbeing.

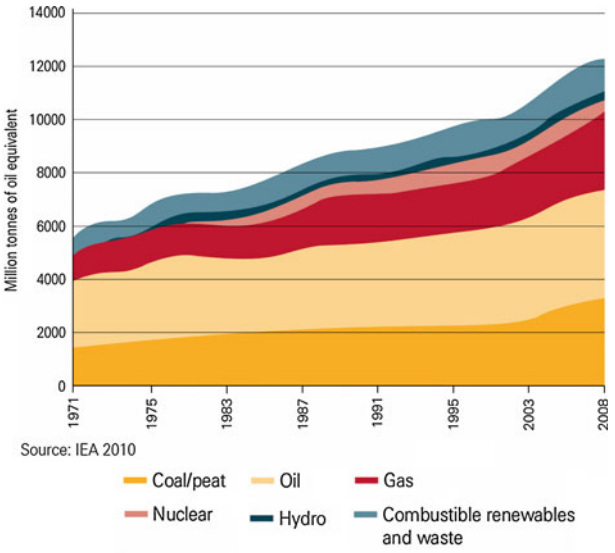

Fig. 3 World energy supply; more than 80 % comes from burning of non-renewable fossil fuels with emission of carbon dioxide

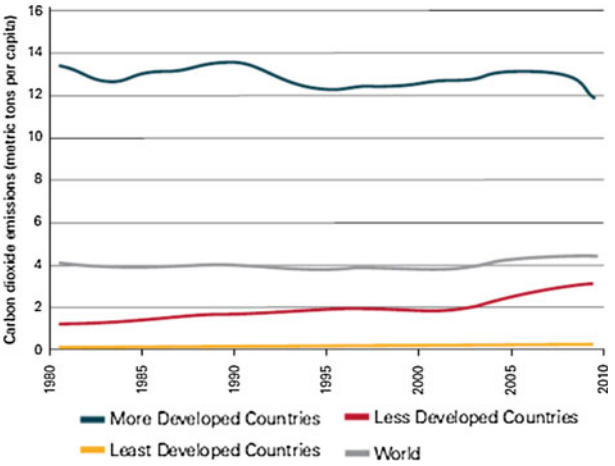

Fig. 4 Regional variation in per capita carbon dioxide emission

A startling feature of Figs. 4 and 5 is the enormous inequality between the most developed countries and the least, amounting to some 50X in per capita use of energy and somewhat lower but still large ratios in consumption of food (especially meat) and water. The figures report a fairly constant use of energy by the most developed countries, but this is misleading. Much manufacturing has been outsourced by the wealthy economies to the emerging economies, so a full accounting would show emissions rising in the most developed countries and increasing more slowly in the developing countries.

There are three obvious and pressing challenges in developing a new relationship between people, their consumption of resources, and subsequent impacts on the environment.

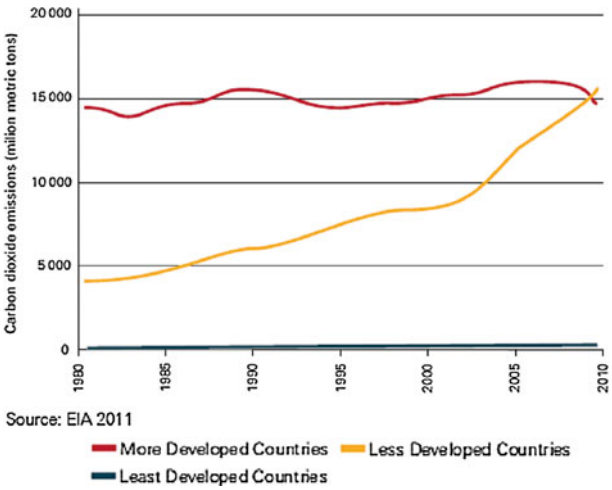

Fig. 5 Regional variation in total carbon dioxide emission

Firstly, the world's 1.3 billion poorest people need to consume more in order to be raised out of extreme poverty. This is critical to reducing global inequality, and to ensuring the wellbeing of all people.

Secondly, in the most developed and increasingly in the emerging economies consumption that is already causing damage (e.g. emission of carbon dioxide from fossil fuel burning; destruction of stocks by overfishing) must be urgently reduced. This will entail scaling back or radical transformation of some current practices and the adoption of sustainable technologies, and is critical to ensuring a sustainable future for all.

Thirdly, rapid population growth needs to be slowed, but this is by no means a coercive prescription and can be achieved by voluntary means. The ultimate human carrying capacity of the earth is a contested figure, because it rests on subjective visions of wellbeing, but the achievement of stable and indeed gradually falling numbers, together with reduced material consumption will alleviate pressure on resources and increase personal opportunities in future generations.

What are the prospects for success in overcoming these challenges? Does humanity have a plan for flourishing? In June 2012 at the Rio+20 UN Earth summit, it was agreed that a set of international Sustainable Development Goals would be introduced. This process is happening at the same time as the review of the existing Millennium Development Goals, which run until 2015. These negotiations provide a framework to meet the needs of developing countries, as well as the needs of the planet, from 2015 onwards.

In light of progress during recent decades, there are grounds for optimism that the human population will stabilise during this century. This will not happen automatically: investment is urgently required, and there are serious conceptual barriers to be overcome, but the required expenditure is not great and is fully consistent with human rights. Voluntary family planning, as part of general healthcare, brings benefits to the individual wellbeing of men and women around the world. The present situation entails denial of rights for many, in that a large unmet need for family planning remains, particularly in the least developed countries: surveys show that well over 200 million women worldwide want but lack access to modern contraception. Education will play an important role, as it empowers people in many aspects of their lives. Well educated people tend to live longer healthier lives, are more able to choose the number

of children they have and are more resilient to, and capable of, change. Action is important. For a range of reasons, some people are experiencing famine, disease and conflict. Rapid population growth aggravates these problems. It is a grave error to argue, as some do, that greater numbers of people will solve everything because more people equate to more ideas. The notion perhaps has some validity on the micro scale, and for the few who are most successful in these matters. It is not true on the macro scale where greater numbers mean less opportunity to flourish or even starvation for the poorer members. It would surely be better to avoid the latter. With goodwill and prompt action a plateau of perhaps 10 billion people is achievable by 2100.

Similarly, there should really be no insuperable difficulty in eliminating extreme poverty. There are actually sufficient resources for the present numbers of people, but distribution is inequitable. For example: enough food is thrown away each day to provide for those who have too little, and affordable medicines could be provided broadly. Although technology can help, poverty should not be seen as primarily a technological problem. The root of the matter is whether there is a political will to fix it. The desirability of equality is somewhat contested, for it is possible to imagine an unequal yet sustainable world; but such a world would deny many people the opportunity to flourish, would be profoundly unethical, and would guarantee future conflicts. The concept of a more equal world, with concomitant reduction of poverty, is now built into development goals and should provide the means to move forward.

However these achievements, while necessary, will not be sufficient to provide a sustainable future in which all can flourish. At present there are no well charted ways for 10 billion people to achieve lifestyles like those enjoyed in the most developed countries, because the only known way forward in a democratic framework is increased material consumption, and that will come into collision with the finite earth. Yet why should the less well off not aspire to the same lifestyle as the rich? In short, on the consumption side the prospects look decidedly bleak, and yet political recognition of the human plight is woefully lacking. For example, there is now a race against time to arrest global warming before irretrievable damage is done to humanity's future; warming can be slowed to the long term benefit of all, yet somehow agreement is hard to reach. How can this situation be changed? In principle there are ways forward, illustrated by the following three examples; these are not mutually exclusive.

First, for a high standard of living there is a need for some material consumption, but not necessarily for it to increase indefinitely. There is a lot of room for the most developed countries to greatly reduce material consumption without disadvantaging living standards - and indeed with benefit to them, for example by reduction of pollution. Decoupling economic activity from material and environmental throughputs is needed urgently e.g. by reusing and recycling materials, obtaining energy from renewable sources, and consumers paying for the wider costs of their consumption.

Second, there is room for economic growth itself to be slowed. There is no reason in principle to adopt any particular growth rate, but everyone competes for high growth because nobody wants to be left behind the others. Yet it is well understood that, beyond the point of severe deprivation, human happiness depends little on absolute material standards and much more on perception of relative wealth. In a more equal society there can be less pressure for competitive growth, along with greater trust between its members. Despite benefits for human wellbeing, movement in this direction seems to be viewed as undesirable in much current economic thinking, but should be taken seriously in view of the planetary situation.

Third, science and technology have a crucial role to play in meeting the challenges by improving the understanding of causes and effects, and in developing ways to limit the most damaging trends and to ensure a more sustainable world. For example, switching energy supply to renewable sources that do not emit greenhouse gases is of pressing importance;

many solutions are at hand, and others will be found. Crop strains that provide higher yields or are tolerant to adverse conditions will be extremely valuable, especially in the face of now inevitable climate change. The elimination of most diseases is a very large but accomplishable task. But technology alone is not enough. Attention must be paid to the socio-economic issues associated with technological deployment, and changes in usage and governance instituted, so that the environmental benefits are realised and so that the situation of the poor is improved relative to that of the rich.

A difficulty in pursuing these pathways is that present economic models are strongly coupled to material growth, and use GDP, which simply calculates the sum total of financial transactions, as a measure of progress. Improving the wellbeing of individuals so that humanity flourishes rather than survives requires moving beyond market measures to fully valuing natural capital and non-market goods in order to estimate overall wealth. But GDP in its present form is deeply embedded in national economies and international relations, and will be hard to relinquish. Citizens of a high GDP nation can purchase goods and services, and travel, in a way that is denied to those of low GDP nations; they will naturally vote for continuing such desirable freedoms and the accompanying self-esteem. At government level it is surely not an exaggeration to say that GDP has become a strategic weapon; for example, it provides strength in trade negotiations, and enables the construction or purchase of military hardware. This is not to say that GDP+ measures should not be sought after, but simply to acknowledge that the path to their adoption will not be easy.

Even the notion of valuing natural capital, as obvious a step as it seems, is not without controversy. Some consider that the mere act of setting a price on a resource in its natural state is to commodify it and to invite destructive exploitation. Others consider that if the price is set correctly the resource will be exploited sustainably; emissions trading schemes do so with some success on a regional basis among well matched partners. However, in an unequal world pricing alone will not lead to equitable access on a global basis.

These are some of the reasons why this volume of ERE is such a very important sequel to ‘People and the planet’. The contributors explore the practicalities of overcoming the challenges and the changes to the current socio-economic model and institutions that are needed to allow both people and the planet to flourish. All of this is vital if future generations are to inherit a world that offers them scope to flourish and to continue the human journey.